PRP COMMITTEE FOR THE NL INDUSTRIES/TARACORP SITE

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BY MESSENGER

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Region V (5CS-TUB-3)
230 South Dearborn Street
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Re: NL Industries/Taracorp Granite City Superfund Site

Dear Mr. Siegel:

I. Introduction

This letter is in response to EPA's September 14, 1990 letter from Mr. Norman Niedergang, in which EPA rejected the PRP Committee's (the "PRPs") August 31, 1990 good faith offer. The PRPs have waited until now to respond to EPA's September 14 rejection letter because we have been attempting to negotiate with you and Brad Bradley for the past several weeks. Since we have been unsuccessful and therefore unable to reach an agreement with EPA thus far, the PRPs believe it is now appropriate to respond to EPA's September 14 letter.

The September 14 rejection letter states that the primary reason that the PRPs' offer was rejected was that the offer failed to accept the 500 ppm cleanup standard. However, this is not completely true because the PRPs agreed that they would clean up the site to the 500 ppm level if the site-specific data on actual blood lead levels of residents and on environmental lead sources demonstrated that 500 ppm was the appropriate cleanup level. In any event, EPA has set forth no rational basis for choosing the 500 ppm cleanup standard. EPA stated in its Record of Decision ("ROD") that the 500 ppm cleanup standard was based on an EPA lead guidance document and on

Appendix B to the ROD. The EPA Lead Guidance[1] provides that the cleanup level of soil containing lead ranges from 500 ppm to 1000 ppm (perhaps higher or lower), depending on site-specific factors. However, as described more fully below, there was nothing in the record during the comment period which supported EPA's decision to choose the 500 ppm cleanup standard over another point within the 500 ppm - 1000 ppm range. Appendix B to the ROD, which discusses the use of the Lead Uptake/Biokinetic ("U/B") model, was added after the comment period. In any event, EPA states in the September 14 letter that it did not rely on the U/B model in choosing the cleanup level at the Granite City site, and thus there is no support in the record for its decision to use the 500 ppm standard. To the extent that EPA did rely on the U/B model, the PRPs showed in the August 31 good faith offer that EPA failed to properly consider the site-specific factors and specifically ignored the relationship between Granite City soil lead levels and potential blood lead levels in the surrounding population, the recognized indicator of an adverse health impact. The PRPs' August 31 good faith offer, on the other hand, proposed that this relationship be properly evaluated to determine the appropriate cleanup standard for the Granite City site.

II. The PRPs' Good Faith Offer

In the August 31, 1990 good faith offer, the PRPs offered to do virtually all of the work required by the ROD. Concerning residential soils, the PRPs agreed to clean up all soils having lead concentrations in excess of 1000 ppm whether or not site-specific data demonstrated any health risks based on those soil lead levels. In addition, the PRPs agreed to clean up below that level should site-specific data on actual blood lead levels of residents and on environmental lead sources demonstrate a health risk caused by lead in the soil. The PRPs offered to promptly gather such data, which would include blood lead sampling of Granite City residents to determine health risks from lead, and sampling of environmental sources of lead associated with the blood samples to determine the cause of any elevated blood lead levels. Environmental sampling for lead might include household dust, household paint, soil, air, and drinking water.

Residential soil cleanup, as now contemplated by EPA, involves bringing heavy excavating equipment into residential neighborhoods and digging up and removing the soil in each affected yard. The process is highly disruptive to residents; creates risk of injury, especially to children, associated with

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[1] OSWER Dir. #9355.4-02.

the movement and operation of heavy equipment; and is costly to the PRPs. It also stirs up lead-contaminated dust which will be inhaled by residents and workers, increasing the health risk that the cleanup is supposed to mitigate. It is not known if these short-term risks are justified by the possible long-term benefits. In fact, it is our understanding that the feasibility study only considered soils with lead levels greater than 1000 ppm. Thus, with respect to soils with lead levels between 500 ppm and 1000 ppm, EPA has ignored the requirements of the National Contingency Plan ("NCP").[2]

III. EPA's Rejection of the Good Faith Offer

EPA's September 14, 1990 letter states that the PRPs' offer contained a number of misconceptions regarding the 500 ppm cleanup standard and how it was chosen and that the PRPs' offer was not a "good faith" offer because it did not accept the 500 ppm standard. However, as shown below, there is no support in the record for the 500 ppm cleanup level. Not only was Appendix B added to the ROD after the comment period, but EPA specifically stated in the September 14 letter that it did not use the U/B model in choosing the Granite City cleanup level, thus leaving nothing in the record supporting the 500 ppm standard. To the extent that EPA did rely on the U/B model, it failed to properly consider the relationship between Granite City soil lead levels and potential blood lead levels in the surrounding population.

A. Site-Specific Conditions

1. Lead Bioavailability and Effects on Children

In numbered paragraph 1 of the September 14 letter, EPA claims that the smelter operations in Granite City resulted in the emission of small, highly bioavailable particles and that low exposures to this form of lead have been shown to have significant health effects on children. However, EPA's claim begs the question of the quantitative relationship between soil lead levels and blood lead levels, the recognized indicator of adverse health effects. Furthermore, EPA has made no measure of the bioavailability of the soil lead at Granite City, nor has it considered the many other chemical and soil factors affecting the

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[2] See 40 C.F.R. § 300.68 (1985) (old NCP); 40 C.F.R. § 300.430 (1990) (new NCP).

bioavailability of lead.[3] In this regard, we note that the EPA Lead Guidance states that "the Agency has not developed a position regarding the bioavailability issue . . ."[4]

In addition, U/B model runs by TRC Environmental Consultants ("TRC") took into account lead bioavailability values supplied by EPA, which accounts for the high bioavailability of smelter emissions. TRC fine-tuned the U/B model to incorporate the best available soil lead absorption data and to incorporate the latest views of EPA's Office of Air Quality Planning and Standards ("OAQPS") concerning soil lead absorbability.[5] OAQPS has worked extensively with the model to fine-tune and validate its predictive ability. Its guidance indicates that soil lead bioavailability decreases with increased concentrations of soil lead. As noted in Exhibit B to the good faith offer, TRC's analysis included a bioavailability assessment and concluded that even if one assumes that bioavailability is high, a soil lead concentration of 1000 ppm will not significantly affect blood lead levels in Granite City.

Furthermore, EPA's claim in numbered paragraph 1 of the September 14 letter that low levels of lead in soil would have adverse effects on children is based upon the assumption that even small changes in soil lead have a large impact on blood lead. However, EPA's assumption is without merit because the assumption is only valid under conditions in which the ambient lead level is also high.[6] Studies conducted under conditions where ambient lead concentrations are low show much weaker, less dramatic association between soil lead levels and blood lead

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[3] Chaney, R.L., Mielke, H.W. and Starrett, S.B. 1988. Speciation, Mobility and Bioavailability of Soil Lead. In: Lead in Soil: Issues and Guidelines. Environ. Geochem. Health Monograph (Supplement to Vol. 9) pp. 105-129.

[4] OSWER Dir. #9355.4-02.

[5] U.S. EPA, Office of Air Quality Planning and Standards, 1989. Review of the National Ambient Air Quality Standards for Lead: Exposure Analysis Methodology and Validation - OAQPS Staff Report.

[6] U.S. EPA, Environmental Criteria and Assessment Office, 1986. Air Quality Criteria For Lead, Volume III, Section 11.4.

levels.[7] The difference between these two different types of situations is that ambient lead exposures will cause simultaneous elevations in soil and blood lead levels which will obscure the true relationship between these two measures. However, the shallow slope between soil lead levels and blood lead levels found under conditions of low ambient lead is more applicable to Granite City because Granite City does not have an ambient lead problem. Therefore, a 1000 ppm soil lead concentration will not significantly affect blood lead levels in Granite City.

2. Synergistic Effects of Other Industrial Pollutants on Lead Toxicity

In numbered paragraph 1 of the September 14 letter, EPA also claims that since Granite City is an industrialized area, toxicants unrelated to the smelter emissions will synergize lead's effects. EPA has not cited any data, nor do we know of any, which support this justification for setting the remediation concentration at 500 ppm. To the contrary, it is known that zinc salts, which may be present in polluted, industrialized areas, reduce lead's effects by interfering with lead absorption.[8]

3. Other Site-Specific Factors

EPA also claims in numbered paragraph 1 of the September 14 letter that 500 ppm is the proper cleanup standard because the soil contains elevated levels of lead, the site is a residential site, and children have unrestricted access to the residential area. However, these factors are factors that would exist at any residential site involving lead contamination and therefore would exist at every site to which the guidance

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[7] Bornschein, R., Clark, S., Pan, W., and Succop, P. 1990. Midvale Community Lead Study, Final Report.

Rabinowitz, M.B. and Bellinger, D.C. 1988. Soil-Blood Lead Relationship Among Boston Children. Bull. Environ. Contam. Toxicol. 41:791-797.

Stark, A.D., Quah, R.F., Meigs, J.W., and DeLouis, E.R. 1982. The Relationship of Environmental Lead to Blood-Lead Levels in Children. Environ. Res. 27:373-383.

[8] Cerklewski, F.L. and Forbes, R.M. 1976. The Influence of Dietary Zinc in Lead Toxicity in the Rat. J. Nuti. 106:689.

applies. These factors merely demonstrate that the guidance range of 500 ppm - 1000 ppm of soil lead is the appropriate range to consider here. They provide no basis for selection of any point within the range because they are common to every site to which the range applies.

B. EPA's Use of the U/B Model

EPA states in numbered paragraph 2 of the September 14, 1990 letter that the PRPs misunderstood EPA's use of the U/B model. Despite EPA's use of the U/B model in Appendix B of the ROD, EPA claims that the U/B model has not yet been approved for use in setting cleanup levels at Superfund sites and that EPA did not rely on the use of the U/B model at the Granite City site. If EPA did not rely on the U/B model, then there is no basis in the record for EPA's decision to use a 500 ppm cleanup standard. Appendix B to the ROD was the only document in the record which attempted to discuss the relationship between soil lead levels and blood lead levels. Without the use of the U/B model, there is no basis in the record for the 500 ppm level.

EPA also claims in numbered paragraph 2 that, although it did not rely on the U/B model, it did consider it and concluded that the 500 ppm cleanup standard was appropriate. However, the PRPs' August 31 good faith offer demonstrated very significant errors in EPA's use of the U/B model to support its selection of a 500 ppm cleanup level. Specifically, the PRPs showed that:

(1) EPA used obsolete rather than current EPA data on dietary lead sources, thus overstating blood leads related to soil lead;

(2) EPA failed to account for decreasing rates of human lead absorption with increasing levels of lead exposure, again overstating blood leads;

(3) EPA failed to use site-specific concentrations of lead in household dust.

(4) EPA failed to consider available calibration data from four other lead sites.

The PRPs also demonstrated that, using current data, the U/B model estimates that exposure to 1000 ppm of soil lead in Granite City residential soils will not unsafely elevate children's blood lead levels.

C. The PRPs' Criticism of EPA's Use of the U/B Model

In numbered paragraph 4 of EPA's September 14 letter, EPA claims that the PRPs did not present their criticism of EPA's use of the model during the public comment period. It would have been impossible for the PRPs to comment on EPA's use of the model during that period because EPA's use of the model was not part of the proposed plan subject to comment; Appendix B to the ROD was added after the comment period. It makes no sense to say that the PRPs should have commented on EPA's use of the model during the comment period when EPA added the use of the model after such period. Furthermore, many of the PRPs never received notice of the comment period. The PRPs did receive notice of the December 18, 1989 meeting with EPA and reasonably expected that they would receive the same type of notice for the comment period. However, no such notice was received. Only a few of the PRPs found out about the comment period, and this was by accident and late in the comment period.

Numbered paragraph 4 of the September 14 letter also states that the lead study conducted in Midvale, Utah, discussed by the PRPs in the good faith offer, is flawed and thus prohibits its use in Region V. However, TRC utilized the Midvale data set because of the completeness of the raw data in providing blood lead and environmental lead data for an area formerly impacted by lead smelting and mining operations. EPA's criticism of the Midvale study for excluding children with the highest blood lead concentrations is a misunderstanding of the methods of Bornschein, et al. (1990).[9] The exclusion of certain data was based upon methodological and statistical principles and did not introduce a bias in the data. This was demonstrated by the extensive analyses the authors did on the excluded data, in which they showed that the excluded and included data had no statistically significant differences between them. TRC's use of the Midvale data was merely to demonstrate that lead bioavailability decreases at high soil lead concentrations. The Midvale data set was supported by an analysis of four other

[9] Bornschein, R., Clark, S., Pan, W., and Succop, P. 1990. Midvale Community Lead Study, Final Report.

smelter sites. Furthermore, EPA's own mode validation efforts[10] support TRC's use of the Midvale data set and the U/B model.

EPA also claims in numbered paragraph 4 that a single blood-lead determination is not an appropriate basis for selection of a cleanup level. In support, EPA claims that a blood lead sample cannot show whether an elevated blood lead level results from a current exposure to lead or a past exposure to lead because even without current exposure, lead deposited in bone from past exposure will enter the bloodstream in measurable levels. EPA neglects to point out, however, that a blood lead study which reveals an absence of elevated lead in blood shows that there has been neither present nor recent past absorption of lead into the body.

Moreover, while it may be true that a single measurement of a single individual blood lead concentration may not be entirely reliable as a measure of that individual's exposure because nutritional and age-related factors may affect the resultant blood lead concentration, the same is not true of a community-wide sampling. Population blood lead concentrations are a good measure of community-wide exposure as shown by their constancy over several years[11] and by the good correlation between population blood lead and environment lead in cases where the environmental lead burden has declined. If blood lead were not a reliable index of exposure, these correlations would be absent. In fact, the present blood lead level concentration at Granite City is likely to represent an overestimate of current exposure because, with lower ingestion rates, more lead is mobilized from storage sites in the body. Since the environmental lead burden has declined and will continue to decline at Granite City (as well as in most other regions of the U.S.), the community blood lead data obtained from a new study will represent a higher blood lead level than that which will occur in the future, even without a major soil remediation effort.

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[10] U.S. EPA, Office of Air Quality Planning and Standards, 1989. Review of the National Ambient Air Quality Standards for Lead: Exposure Analysis Methodology and Validation - OAQPS Staff Report.

[11] Rabinowitz, M.B. and Bellinger, D.C. 1988. Soil-Blood Lead Relationship Among Boston Children. Bull. Environ. Contam. Toxicol. 41:791-797.

D. Regression Analysis

Finally, numbered paragraph 5 of EPA's September 14 letter states that the PRPs cannot use the U/B model to do a "reverse regression" to determine appropriate soil lead levels based on blood lead levels. Here, EPA misunderstands the PRPs' offer. The PRPs simply propose to recalibrate the U/B model so that it reflects the actual relationship of measured levels of blood lead in Granite City to measured levels of various environmental sources at Granite City, and then to apply the model to determine the levels of blood lead that will result from changes in soil lead.[12]

IV. Conclusion

In sum, the 500 ppm standard was chosen without considering the relationship between soil lead levels and blood lead levels, the recognized indicator of adverse health effects. The PRPs' good faith offer, on the other hand, proposed to properly evaluate this relationship to determine the appropriate cleanup standard for the Granite City site. The PRPs recognize that setting an exact soil remediation level is a quantitative decision that must be based upon a great deal of site-specific data. The PRPs are committed to promptly obtaining the necessary data and offer such a study with full input from EPA. We do not agree that linear regression models cannot be used to describe a relationship between soil lead levels and blood lead levels. Rather, it is this relationship, which is currently not known for Granite City, that must be understood for the proper remediation concentration to be set.

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[12] We note that the EPA Lead Guidance endorsed this type of calibration of the U/B model: "Use of the model thus allowed a more precise calculation of the level of cleanup needed to reduce risk to children based on the contamination from all other sources and the effect of contamination levels on blood-lead levels of children." OSWER Dir. #9355.4-02.

We hope the EPA will reconsider its decision and will agree to work with the PRPs toward a remediation of the Granite City site.

Very truly yours,

Dennis P. Reis

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cc: Brad Bradley
PRP Group